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SEQUENCE LISTING

<110> Barany, Francis  
Cao, Weiguo  
Tong, Jie

<120> HIGH FIDELITY THERMOSTABLE LIGASE AND USES THEREOF

<130> 19603/2615

<140> 09/830,502  
<141> 1999-10-29

<150> 60/106,461  
<151> 1998-10-30

<150> PCT/US99/25437  
<151> 1999-10-29

<160> 20

<170> PatentIn Ver. 2.1

<210> 1  
<211> 674  
<212> PRT  
<213> Thermus sp.

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20 25 30

Ser Asp Ala Glu Tyr Asp Arg Leu Leu Arg Glu Leu Lys Glu Leu Glu  
35 40 45

Glu Arg Phe Pro Glu Leu Lys Ser Pro Asp Ser Pro Thr Glu Gln Val  
50 55 60

Gly Ala Arg Pro Leu Glu Ala Thr Phe Arg Pro Val Arg His Pro Thr  
65 70 75 80

Arg Met Tyr Ser Leu Asp Asn Ala Phe Ser Leu Asp Glu Val Arg Ala  
85 90 95

Phe Glu Glu Arg Ile Glu Arg Ala Leu Gly Arg Lys Gly Pro Phe Leu

100	105	110
Tyr Thr Val Glu Arg Lys Val Asp Gly Leu Ser Val Asn Leu Tyr Tyr		
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Glu Glu Gly Ile Leu Val Phe Gly Ala Thr Arg Gly Asp Gly Glu Thr		
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Gly Glu Glu Val Thr Gln Asn Leu Leu Thr Ile Pro Thr Ile Pro Arg		
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Arg Leu Thr Gly Val Pro Asp Arg Leu Glu Val Arg Gly Glu Val Tyr		
165	170	175
Met Pro Ile Glu Ala Phe Leu Arg Leu Asn Gln Glu Leu Glu Glu Ala		
180	185	190
Gly Glu Arg Ile Phe Lys Asn Pro Arg Asn Ala Ala Ala Gly Ser Leu		
195	200	205
Arg Gln Lys Asp Pro Arg Val Thr Ala Arg Arg Gly Leu Arg Ala Thr		
210	215	220
Phe Tyr Ala Leu Gly Leu Gly Leu Glu Glu Thr Gly Leu Lys Ser Gln		
225	230	235
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His Asp Leu Leu Leu Trp Leu Arg Glu Arg Gly Phe Pro Val Glu His		
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260	265	270
Ala Trp Leu Lys Glu Arg Arg Lys Leu Pro Phe Glu Ala Asp Gly Val		
275	280	285
Val Val Lys Leu Asp Asp Leu Ala Leu Trp Arg Glu Leu Gly Tyr Thr		
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Arg Ile Thr Pro Val Gly Val Leu Glu Pro Val Phe Ile Glu Gly Ser		
340	345	350
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355

360

365

Asp Val Arg Ile Gly Asp Trp Val Leu Val His Lys Ala Gly Gly Val  
 370 375 380

Ile Pro Glu Val Leu Arg Val Leu Lys Glu Arg Arg Thr Gly Glu Glu  
 385 390 395 400

Lys Pro Ile Ile Trp Pro Glu Asn Cys Pro Glu Cys Gly His Ala Leu  
 405 410 415

Ile Lys Glu Gly Lys Val His Arg Cys Pro Asn Pro Leu Cys Pro Ala  
 420 425 430

Lys Arg Phe Glu Ala Ile Arg His Tyr Ala Ser Arg Lys Ala Met Asp  
 435 440 445

Ile Gln Gly Leu Gly Glu Lys Leu Ile Glu Lys Leu Leu Glu Lys Gly  
 450 455 460

Leu Val Arg Asp Val Ala Asp Leu Tyr Arg Leu Lys Lys Glu Asp Leu  
 465 470 475 480

Val Asn Leu Glu Arg Met Gly Glu Lys Ser Ala Glu Asn Leu Leu Arg  
 485 490 495

Gln Ile Glu Glu Ser Lys Gly Arg Gly Leu Glu Arg Leu Leu Tyr Ala  
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Leu Gly Leu Pro Gly Val Gly Glu Val Leu Ala Arg Asn Leu Ala Leu  
 515 520 525

Arg Phe Gly His Met Asp Arg Leu Leu Glu Ala Gly Leu Glu Asp Leu  
 530 535 540

Leu Glu Val Glu Gly Val Gly Glu Leu Thr Ala Arg Ala Ile Leu Asn  
 545 550 555 560

Thr Leu Lys Asp Pro Glu Phe Arg Asp Leu Val Arg Arg Leu Lys Glu  
 565 570 575

Ala Gly Val Glu Met Glu Ala Lys Glu Arg Glu Gly Glu Ala Leu Lys  
 580 585 590

Gly Leu Thr Phe Val Ile Thr Gly Glu Leu Ser Arg Pro Arg Glu Glu  
 595 600 605

Val Lys Ala Leu Leu Arg Arg Leu Gly Ala Lys Val Thr Asp Ser Val

610

615

620

Ser Arg Lys Thr Ser Phe Leu Val Val Gly Glu Asn Pro Gly Ser Lys  
625 630 635 640

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cttagggagc ttaaggagct ggaggagcgc ttcccggc tcaaaagccc cgactcccc 180  
acggaacagg tggggcgag gcctctggag gccacccccc gcccggtgcg ccacccacc 240  
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Glu Xaa  
20 25 30

Xaa  
35 40 45

Xaa  
50 55 60

Xaa  
65 70 75 80

Xaa			
85	90	95	
Xaa			
100	105	110	
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Thr Gly Xaa Xaa Xaa			
115	120	125	
Xaa			
130	135	140	
Xaa			
145	150	155	160
Xaa Pro Phe Glu Ala			
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Glu Xaa  
20 25 30

Xaa  
35 40 45

Xaa			
50	55	60	
Xaa			
65	70	75	80
Xaa			
85	90	95	
Xaa			
100	105	110	
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Val Glu Arg Glu Gly			
115	120	125	
Xaa			
130	135	140	
Xaa			
145	150	155	160
Xaa Pro			
165	170	175	
Phe Glu Ala Asp Gly Val Val Val Lys Leu Asp			
180	185		
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Glu Xaa			

20

25

30

Xaa  
35 40 45

Xaa  
50 55 60

Xaa  
65 70 75 80

Xaa  
85 90 95

Xaa  
100 105 110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Ser Gly Xaa Xaa Xaa  
115 120 125

Xaa  
130 135 140

Xaa  
145 150 155 160

Xaa Pro Phe Glu Ala  
165 170 175

Asp Gly Val Val Val Lys Met Asp  
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<213> *Thermus filiformis*

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 Xaa  
   35                       40                       45  
  
 Xaa  
   50                       55                       60  
  
 Xaa  
   65                       70                       75                       80  
  
 Xaa  
   85                       90                       95  
  
 Xaa  
   100                       105                       110  
  
 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Ser Gly Xaa Xaa Xaa  
   115                       120                       125  
  
 Xaa  
   130                       135                       140  
  
 Xaa  
   145                       150                       155                       160  
  
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 Asp Gly Val Val Val Lys Leu Asp  
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Glu Xaa  
 20                   25                   30

Xaa  
 35                   40                   45

Xaa  
 50                   55                   60

Xaa  
 65                   70                   75                   80

Xaa  
 85                   90                   95

Xaa  
 100                  105                  110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Ser Gly Xaa Xaa Xaa  
 115                  120                  125

Xaa  
 130                  135                  140

Xaa  
 145                  150                  155                  160

Xaa Pro Phe Glu Ala  
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Asp Gly Val Val Val Lys Leu Asp  
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<210> 20  
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Xaa  
35 40 45  
  
Xaa  
50 55 60  
  
Xaa  
65 70 75 80  
  
Xaa  
85 90 95  
  
Xaa  
100 105 110  
  
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Ser Gly Xaa Xaa Xaa  
115 120 125  
  
Xaa  
130 135 140  
  
Xaa  
145 150 155 160  
  
Xaa Pro Phe Glu Ala  
165 170 175  
  
Asp Gly Val Val Val Lys Leu Asp  
180